PB90-150897

Superfund Record of Decision (EPA Region 5): Whitehall Municipal Wells, MI. (First Remedial Action), September 1989

(U.S.) Environmental Protection Agency, Washington, DC

29 Sep 89

U.S. Department of Commerce
National Technical Information Service
NTIS

PB90-150897

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R05-89/108
September 1989

EPA

Superfund Record of Decision:

Whitehall Municipal Wells, MI

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL INFORMATION SERVICE
SPRINGFIELD, VA. 22161

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Whitehall Municipal Wells Site, Whitehall, Michigan

STATEMENT OF BASIS

The decision document presents the selected remedial alternative for the Whitehall Municipal Wells Site (the site) developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 and consistent with the National Oil and Hazardous Substances Pollution Contingency Plan to the extent practicable.

This decision is based upon the contents of the Administrative Record for the site.

The State of Michigan concurs with the selected remedial alternative.

DESCRIPTION OF THE REMEDY

The results of the Site Investigation (SI) Follow up and the Remedial Investigation (RI) show that no health risks currently exist from drinking the water from the production well 3 (PW3). Furthermore, the PW3 has been permanently abandoned by the City of Whitehall. Therefore, the selected remedy for this site is "No Further Action."

DECLARATION

The conditions at the site pose no current or potential threat to human health or the environment. Therefore, no further remedial action is necessary. Because no further remedial action is necessary, the statutory requirements of CERCLA Section 121 for remedial actions are not applicable. Because this remedy will not result in hazardous substances remaining on-site above health-based levels, the 5-year review will not apply to this action.

9/29/89
DATE

Frank M. Raiff for
Valdas V. Adamkus
Regional Administrator

Attachments:

1. Summary of Remedial Alternative
2. Community Relations Responsiveness Summary
3. Administrative Record Index

ATTACHMENT I

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. EPA/ROD/R05-89/108	2.	3. Recipient's Accession No. PB 90 150897/AS
4. Title and Subtitle SUPERFUND RECORD OF DECISION Whitehall Municipal Wells, MI First Remedial Action - Final			5. Report Date 09/29/89
			6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address			10. Project/Task/Work Unit No.
			11. Contract(C) or Grant(G) No. (C) (G)
12. Sponsoring Organization Name and Address U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460			13. Type of Report & Period Covered 800/000
			14.

15. Supplementary Notes

Administrative Record Index not included.

16. Abstract (Limit: 200 words)

The Whitehall Municipal Wells site is in Whitehall, Michigan, and includes production well 3 (PW3) which is the the focus of this Record of Decision. Perchloroethylene (PCE) has been detected in the soil and ground water. The suspected source of the PCE is a nearby dry-cleaning operation which leaked PCE until the problem was corrected in 1981. In 1980 the State identified PW3 as the source of contamination in the municipal drinking water supply and recommended that the city use PW3 only on an emergency basis. The State continued to monitor the well, and until October 1988 the city used the well only on an as-needed basis at reduced pumping rates. Results from the remedial investigation conducted in 1988-89 revealed only low levels of contamination in the wells; no contaminant exceeded Maximum Contaminant Levels or Maximum Contaminant Level Goals. In September 1989 the city permanently abandoned PW3 because of the well's poor production capacity, and because new wells and storage facilities built since 1980 have reduced the need for PW3.

The selected remedial action for this site is no further action because the findings of the remedial investigation indicated that contaminant levels in the site's wells do not exceed any State or Federal drinking water standards or criteria and there is no longer a continuing source of contamination. There are no present worth or O&M costs associated with this remedial action.

17. Document Analysis a. Descriptors

Record of Decision - Whitehall Municipal Wells, MI
First Remedial Action - Final
Contaminated Media: None
Key Contaminants: None

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 29
	20. Security Class (This Page) None	22. Price A03

(See ANSI-Z39.18) See Instructions on Reverse

OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

WHITEHALL MUNICIPAL WELLS SITE

WHITEHALL, MICHIGAN

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

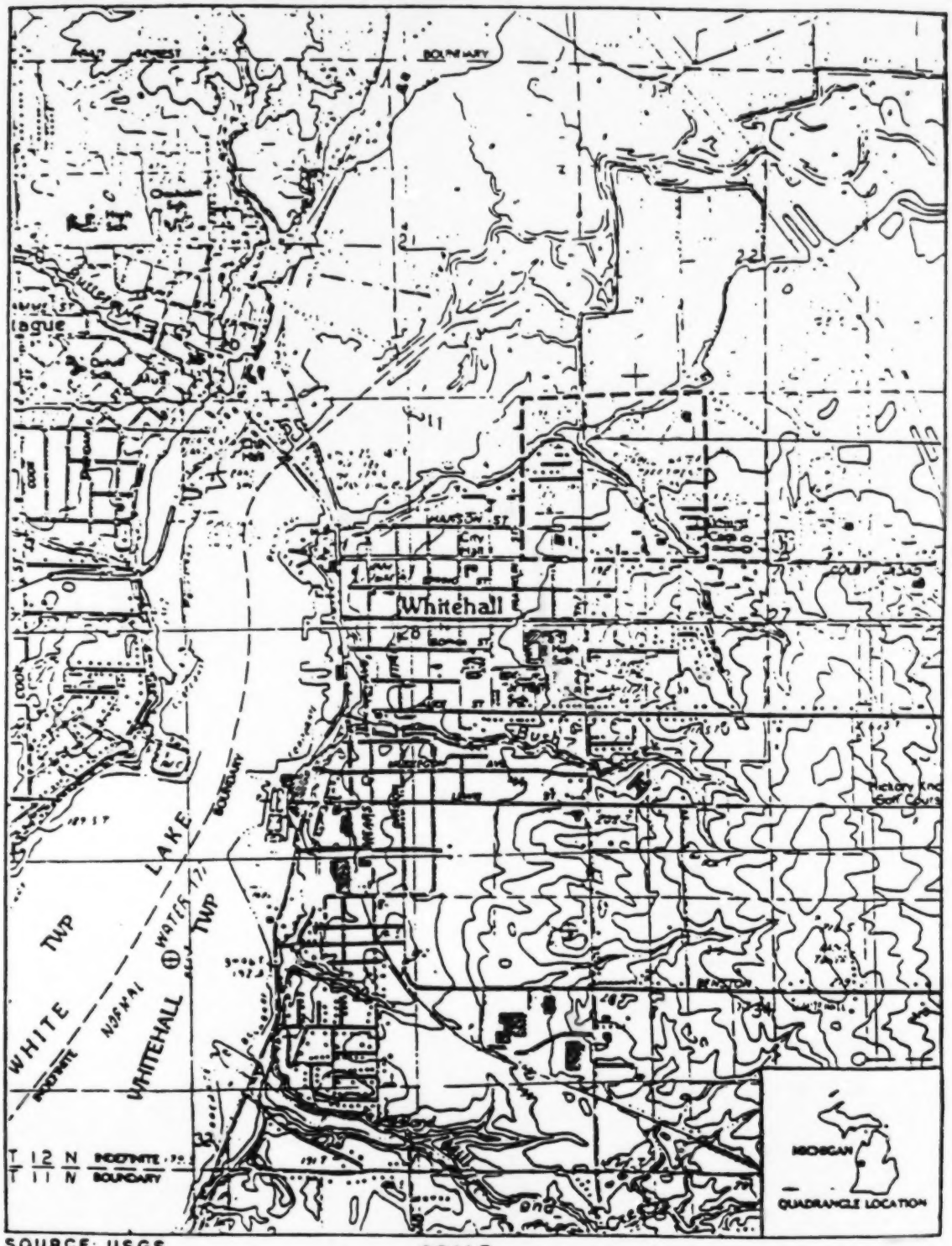
SEPTEMBER 1989

SITE DESCRIPTION AND HISTORY

The Whitehall Municipal Wells site (T.12N., R.17W., Sec. 27) is located in the northeast portion of Whitehall, Michigan, south of the White River (See figure 1). The exact boundaries of the site are unknown because the source(s) of the groundwater contamination have not been identified. However, the nearby laundromat/dry cleaner is a suspect due to its proximity and the known leakage of perchloroethylene (PCE) into the soils at the facility. On May 18, 1981, soil samples were collected around the facility and chemical analysis revealed 1.0 mg/kg of PCE. Since that time, the facility changed hands and the new owner has eliminated the PCE leakage problem. The study area for this site includes the area between Colby Street (Business Route U.S. 31) on the south; the west side of the Oakhurst Cemetery on the east; Franklin Street on the west; and the ravine and backwaters of the White River on the north and northeast (See figure 2). Located within these boundaries is Whitehall Production Well 3 (PW3).

The initial indication of contamination in PW3 was found in October 1980. A routine quarterly analysis of the city's water supply by the Michigan Department of Public Health (MDPH) revealed the presence of PCE in a sample collected from the Whitehall City Hall. Subsequent resampling and analysis confirmed the presence of the contaminant and eventually PW3 was determined to be the source of the problem. In early 1981, MDPH recommended that the city use PW3 only on an emergency basis and that it be eventually replaced. The initial response from the city was to take PW3 off-line and increase pumpage in PW2,4, and 5 to maintain an adequate water supply. The city has continued to use PW3 but on an as needed basis at reduced pumpage rates until October 1988. Since 1982, the MDPH has sampled PW3 on a quarterly basis and the well has shown no contamination. However, the city permanently abandoned the PW3 as of September 1, 1989. The predominant factor in permanent closure is not the previous contamination of the well, but rather its poor production capacity due to its age and extensive rehabilitation costs. Also, a new well and storage facilities built since 1980 have reduced any need for obtaining water from PW3.

Residential wells located northeast of PW3 were tested as part of the Remedial Investigation (RI). Samples collected from homes along Peterson Road in May 1982 indicated that the area groundwater was contaminated with volatile organic compounds. Additional sampling indicated that the Whitelake Landfill and Shellcast, Inc. were the source of this contamination, and a separate issue from the ones involving PW3. In April 1985, Shellcast and Whitelake Landfill entered into a consent agreement with the U.S. EPA to provide a permanent alternate water supply to the residences whose wells were contaminated. Both Shellcast and Whitelake Landfill are currently in the pre-remedial stage and waiting for the final scoring process for possible inclusion on the National Priorities List (NPL).



SOURCE: USGS

SCALE

0 0.5 1 MILE

FIGURE 1 SITE LOCATION MAP

Reproduced from best available copy.

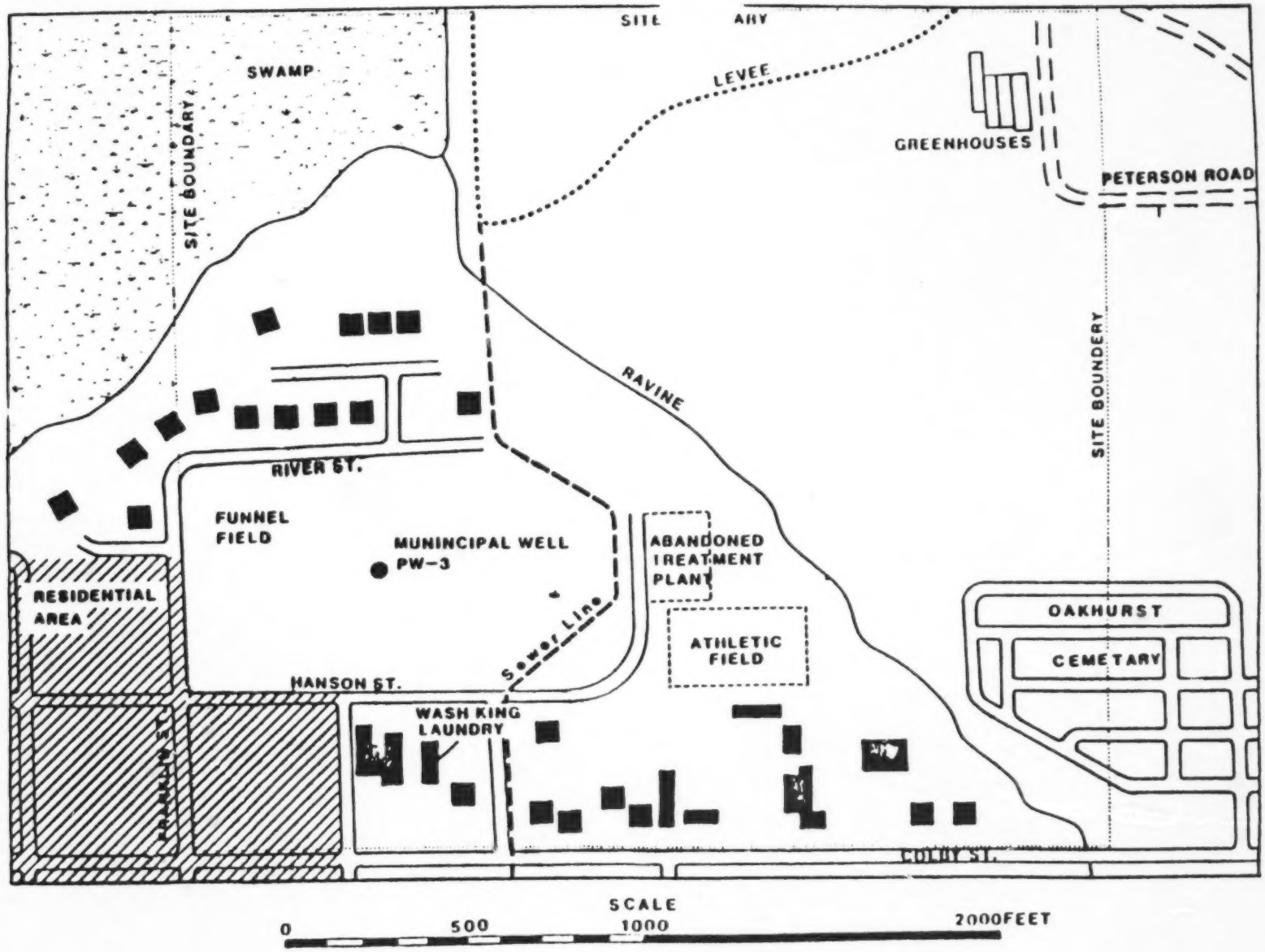


FIGURE 2 SITE BOUNDARY MAP

In September 1984, the PW3 site scored high enough to be placed on the NPL of sites eligible for investigation and cleanup under the Superfund program. In May 1986, Ecology and Environment, Inc. was contracted to perform a Site Investigation (SI) follow-up. On April 1988, Black and Veatch was contracted to perform an RI.

Community Relations History

A Community Relations Plan was developed by the U.S. EPA and a repository was established at the Whitehall Municipal Library, 414 E. Spring, Whitehall. On August 12, 1989 the Proposed Plan was distributed and placed into the repository following publication of a brief analysis of the Proposed Plan. This publication also provided notice of the August 24, 1989 Public Hearing and the period for submission of comments. The Public Hearing was held at the Whitehall City Hall. A response to comments received during the comment period is included in the Responsiveness Summary. The Administrative Record has been placed in the repository.

SITE CHARACTERISTICS

Site Geology

Muskegon County is located on the western flank of the Michigan Basin, a major geologic feature of the upper Midwest. Bedrock units underlying the county dip gently to the east, toward the center of the basin. Unconsolidated deposits in the region are the result of successive episodes of intense Pleistocene glaciation. In Muskegon County, physiographic features are the direct result of late Wisconsinan glacial, glaciolacustrine, and glaciofluvial processes. Surficial features have been further modified by subsequent Holocene environments.

Surficial deposits in the site area are approximately 250 feet thick and comprised of till, alluvium, and lacustrine sands. The Whitehall Moraine is a lateral moraine formed during the final recession of the Michigan Lobe of the Late Wisconsinan glaciation. The texture of the till comprising the moraine has been described as predominantly clay and silt, with lesser amounts of fine sand (USGS 1983). Examination of surficial relief and local boring logs indicates that the extreme southeast portion of the site area lies upon the moraine. The thickness of the surficial sand unit is at least 100 feet in the immediate vicinity of the site.

Site Hydrogeology

The two principal aquifer systems in the Whitehall area are the water table in the Pleistocene deposits and the artesian aquifer in the Marshall Formation. Although it is heavily utilized for water supplies in many areas of Michigan, the Marshall Formation is virtually untapped in northwestern Muskegon County (Western Michigan University 1981). In the immediate vicinity of the site, groundwater is encountered at depths ranging from 45 to 60 feet.

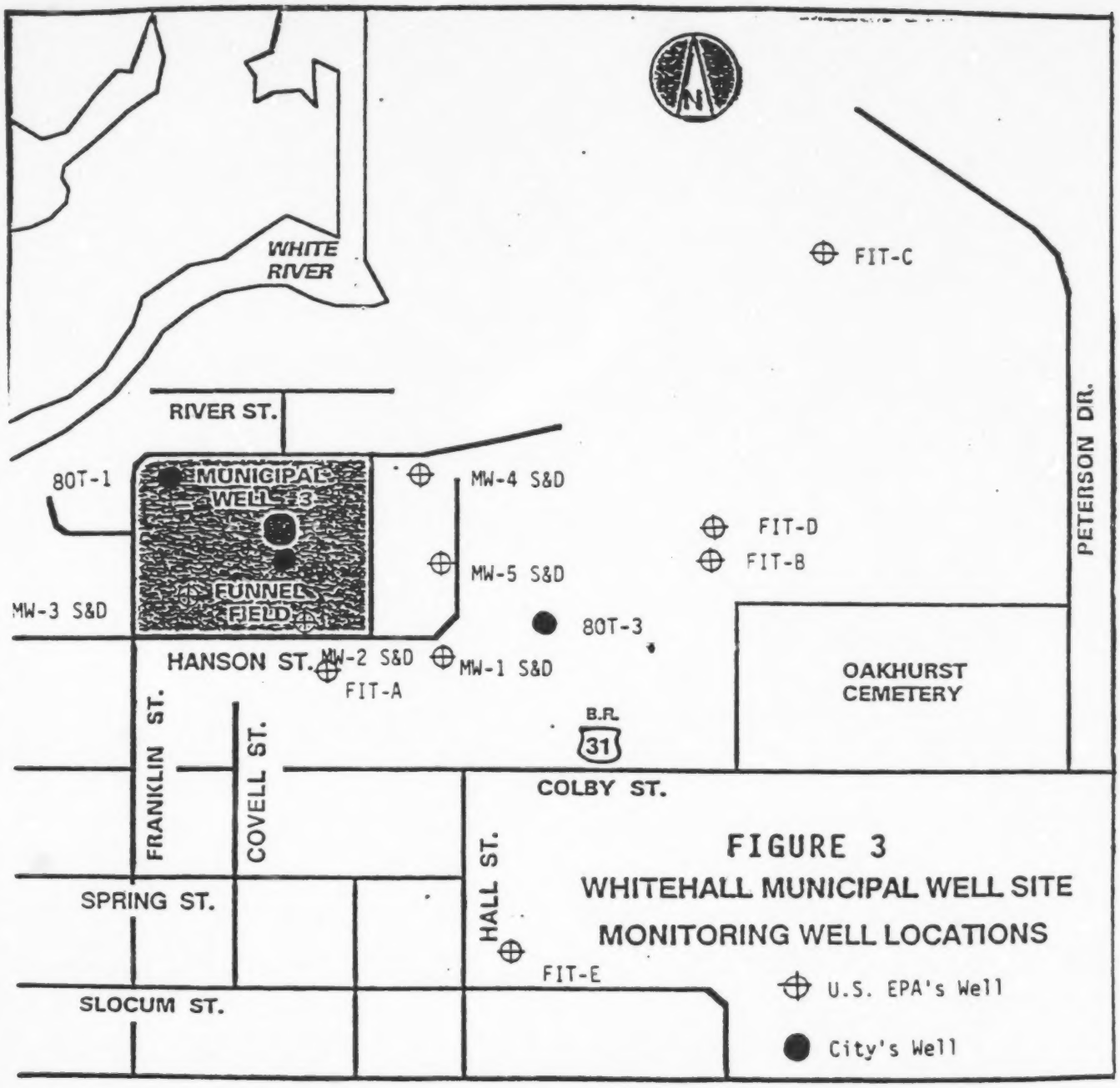


FIGURE 3
WHITEHALL MUNICIPAL WELL SITE
MONITORING WELL LOCATIONS

Based on topography, groundwater flow at the site would be expected to move to the northwest-west, to the White River, White Lake, and Lake Michigan. Previous hydrogeologic investigations of the site area have confirmed that groundwater flow is generally to the northwest, with a westerly component. A mean value for groundwater velocity of 379 feet per year was calculated for this site.

SITE INVESTIGATION FOLLOW-UP AND REMEDIAL INVESTIGATION SUMMARY

The SI follow-up (from May 1986 to April 1988) and RI (from March 1988 to May 1989) were conducted to determine the nature and extent of contamination at the Whitehall Municipal Wells Superfund site. During the SI follow-up, five cluster wells were installed in addition to the monitoring wells put in by the Ecology and Environment, Inc (See figure 3). A Risk Assessment was done to evaluate the level of risk to the human health and the environment. Field activities, conducted by the U.S. EPA, took place between May, 1987 and May, 1989.

During that time groundwater samples and soil samples (during SI follow-up) were collected.

This allowed the U.S. EPA to gather sufficient data to determine if the level of contamination at the site would have an adverse impact on the human health and the environment. The findings of the SI follow-up indicate the following:

A) Groundwater:

Groundwater samples were analyzed for organic compounds (See Table 1) and inorganic constituents (See Table 2). Six of the monitoring well samples (sampled in 1987) contained organic pesticides (alpha, delta, and gamma-BHC; heptachlor; aldrin; heptachlor epoxide; and endosulfan sulfate). The distribution and concentrations of the pesticide compounds did not form a discernable pattern at the site. Pesticides were not found in any of the samples taken in January 1988. The other contaminants, i.e., 1,1,1-trichloroethane, phenol, toluene, benzene, and benzoic acid, which were observed in some monitoring wells, also did not form a discernable pattern nor consistent source. PW3 did not contain any organic contaminants.

The presence of pesticides could be attributed to their application in residential, commercial, and agricultural settings. The agricultural application in orchards to the south and east are likely sources for these compounds. The absence of pesticides in the samples taken in January 1988 is probably due to the fact that they are applied during the spring and summer. Also, high groundwater flow velocities in the area create a very dynamic media where both dilution and migration contribute to the reduction of contaminant levels.

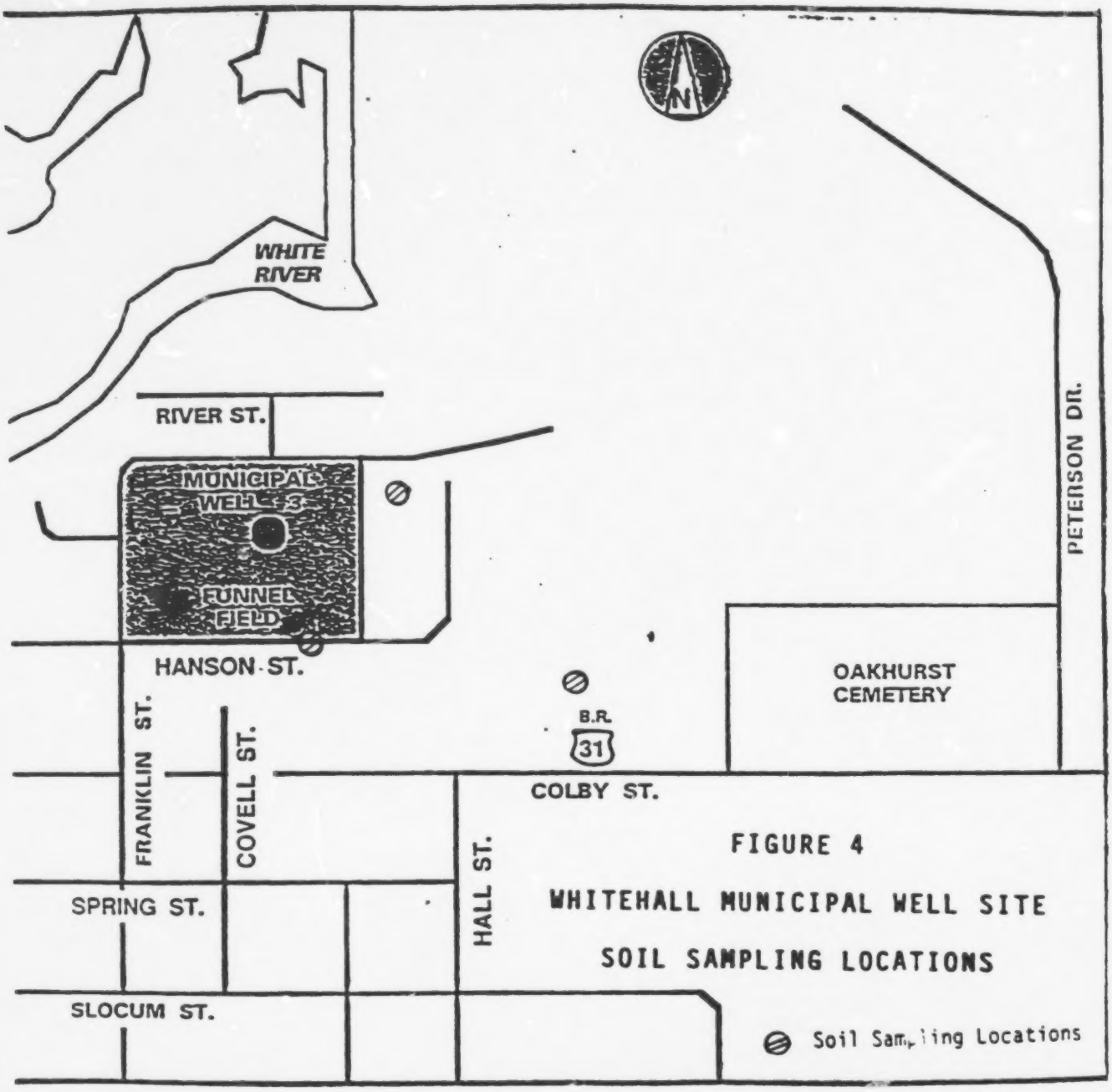


FIGURE 4

WHITEHALL MUNICIPAL WELL SITE

SOIL SAMPLING LOCATIONS

TABLE 1

SUMMARY OF PREVIOUS ORGANIC RESULTS (IN UG/L)

ECTED MPOUNDS	DATE WELL SAMPLER[1]	12-88 MW 1S D&V	12-88 MW 3S D&V	12-88 PRP 23D D&V	12-88 Blank 1 D&V	12-88 Field Blank D&V	12-88 Blank 5 D&V	12-88 Blank 6 D&V	12-88 Blank 7 D&V	1-88 MW 1S E&E	1-88 MW 1S (DUP) E&E	1-88 MW 3S E&E	1-88 MW 3D E&E	1-88 MW 4S E&E	1-88 MW 4D (DUP) E&E
THYLENE CHLORIDE															
LOROFORM						5	5	6	5						
AL TRIHALOMETHANE															
YLIDENE CHLORIDE															
ZENE															
RACHLOROETHYLENE			5												
TONE		10		79											
.1, TRICHLOROETHANE				3J						4J	5	4J			
CHLOROETHENE				2J											
UENE				1J											
UTANONE					13								14	43	29
HOL															
ZOIC ACID															
HA-BHC															
TA-BHC															
HA-BHC															
TACHLOR															
RIN															
TACHLOR-EPOXIDE															
OSULFAN-SULFATE															
N-BUTYLPTHALATE															
ETHYL-2-PENTANONE															
YLENE															
-XYLENE															
-(2 ETHYLHEXYL) PTHALATE															
BON DISULFIDE															2J
ITROSODIPHENYLAMINE															

ESTIMATED VALUE

ALSO DETECTED IN ASSOCIATED BLANK

D&V, BLACK & VEATCH FOR EPA; E&E, ECOLOGY & ENVIRONMENT FOR EPA; FTCH, FISHBECK, THOMPSON, CAR & HUBER FOR WHITELAKE LANDFILL; MDPH, MICHIGAN DEPT. OF PUBLIC HEALTH; EDI, ENVIRONMENTAL DATA, INC. FOR CITY OF WHITEHALL

CONCENTRATION EXCEEDS MCL

CONCENTRATION EXCEEDS WATER QUALITY CRITERIA FOR THE PROTECTION OF PUBLIC HEALTH

TABLE 1

SUMMARY OF PREVIOUS ORGANIC RESULTS (IN UG/L)

DETECTED COMPOUNDS	DATE	1-88	1-88	1-88	1-88	8-87	8-87	8-87	8-87	8-87	8-87	8-87	8-87	8-87	8-87	8-87
	WELL	MW 5S	PW-3	Blank 1	Blank 2	MW 1S	MW 1D	MW 3D	BOT-1	BOT-3	FIT E	MW 2D	MW 2S	MW 3S	MW 4S	Blank
	SAMPLER[1]	E&E	E&E	E&E	E&E	E&E	E&E	E&E	E&E	E&E	E&E	E&E	E&E	E&E	E&E	E&E
METHYLENE CHLORIDE																
CHLOROFORM																
TOTAL TRIHALOMETHANE																
VINYLIDENE CHLORIDE																
BENZENE																
TETRACHLOROETHYLENE					1.2J					10[2]				6[2]		
ACETONE																
1,1,1, TRICHLOROETHANE								11J								
TRICHLOROETHENE						7										
TOLUENE		1J			3.4									4J		
2-BUTANONE		21		35	7.8J	3J										
PHENOL																
BENZOIC ACID																6J
ALPHA-BHC											7J					
DELTA-BHC								0.077[3]		0.11[3]	0.061[3]					
GAMMA-BHC										1.1[3]					.050F	
HEPTACHLOR														.038		
ALDRIN									0.098 J[3]		6.1					
HEPTACHLOR-EPOXIDE																
ENDOSULFAN-SULFATE						0.024J			0.14[3]				6.1			
DI-N-BUTYLPTHALATE			7.3		9.6	0.15										
4-METHYL-2-PENTANONE					1.7J											
M-XYLENE					1.2J										8J	
O/P-XYLENE					1.3J											
BIS-(2 ETHYLHEXYL) PTHALATE					1.6	4J	6J	52		95	30	9J	5J			
CARBON DISULFIDE																
N-NITROSODIPHENYLAMINE												8J				

J - ESTIMATED VALUE

B - ALSO DETECTED IN ASSOCIATED BLANK

1 - B&V, BLACK & VEATCH FOR EPA; E&E, ECOLOGY & ENVIRONMENT FOR EPA; FTCH, FISH BECK, THOMPSON, CAR & HUBER FOR WHITELAKE LANDFILL; MDPH, MICHIGAN DEPT. OF PUBLIC HEALTH; EDI, ENVIRONMENTAL DATA, INC. FOR CITY OF WHITEHALL

2 - CONCENTRATION EXCEEDS MCL

3 - CONCENTRATION EXCEEDS WATER QUALITY CRITERIA FOR THE PROTECTION OF PUBLIC HEALTH

F - UNREADABLE

TABLE 1

SUMMARY OF PREVIOUS ORGANIC RESULTS (IN UG/L)

DETECTED COMPOUNDS	DATE WELL SAMPLER[1]	9-2-87 PRP 23 D FTCH	3-20-86 BOT-1 MDPH	3-20-86 BOT-2 MDPH	3-20-86 BOT-3 MDPH	10-31 PW-3 MDPH	2-10-81 PW-3 MDPH	2-10-81 BOT-2 EDI	2-10-81 BOT-3 EDI	2-16-81 PW-3 EDI	2-16-81 BOT-1 EDI	2-16-81 BOT-2 EDI	2-16-81 BOT-3 EDI	1-0-81 PW-3 EDI	1-0-81 PW-3 EDI
METHYLENE CHLORIDE															
CHLOROFORM				7		1									
TOTAL TRIHALOMETHANE				7		1									
VINYLIDENE CHLORIDE															
BENZENE			5	4	3										
TETRACHLOROETHYLENE		10					4	4	5			0	5	3	5
ACETONE															
1,1,1, TRICHLOROETHANE															
TRICHLOROETHENE															
TOLUENE															
2-BUTANONE															
PHENOL															
BENZOIC ACID															
ALPHA-BHC															
DELTA-BHC															
GAMMA-BHC															
HEPTACHLOR			.095J												
ALDRIN			.14												
HEPTACHLOR-EPOXIDE															
ENDOSULFAN-SULFATE															
DI-N-BUTYLPTHALATE															
4-METHYL-2-PENTANONE															
M-XYLENE															
O/P-XYLENE															
BIS-(2 ETHYLHEXYL) PTHALATE															
CARBON DISULFIDE															
N-NITROSODIPHENYLAMINE															

J - ESTIMATED VALUE

0 - ALSO DETECTED IN ASSOCIATED BLANK

1 - D&V, BLACK & VEATCH FOR EPA; E&E, ECOLOGY & ENVIRONMENT FOR EPA; FTCH, FISH BECK, THOMPSON, CAR & HUBER FOR WHITELAKE LANDFILL; MDPH, MICHIGAN DEPT. OF PUBLIC HEALTH; EDI, ENVIRONMENTAL DATA, INC. FOR CITY OF WHITEHALL

2 - CONCENTRATION EXCEEDS MCL

3 - CONCENTRATION EXCEEDS WATER QUALITY CRITERIA FOR THE PROTECTION OF PUBLIC HEALTH

TABLE 2

SUMMARY OF PREVIOUS INORGANIC RESULTS (IN UG/L)
PAGE 1 OF 5

DETECTED COMPOUNDS / DATE / WELL / SAMPLER[1]	12-88 MW 1S B&V	12-88 MW 1S (DUP) B&V	12-88 MW 1D B&V	12-88 MW 2S B&V	12-88 MW 2D B&V	12-88 MW 2D (DUP) B&V	12-88 MW 3S B&V	12-88 MW 3D B&V	12-88 MW 4S B&V	12-88 BOT-1 B&V
ALUMINUM				30.8 B		30.6 B				
BARIUM	17.3 B	18.2 B	25.2 B	43.0 B	15.4 B	15.4 B	56.4 B	37.0 B	24.0 B	15.4 B
CADMIUM										
CHROMIUM										
COPPER	4.4 B	4.2 B	6.3 B	9.8 B	5.3 B	4.6 B	7.5 B	6.8 B	7.0 B	5.3 B
LEAD				3.2 B			2.9 B	2.7 B		9.2 B
MANGANESE		6.0 B		23.8		12.2 B				
NICKEL				9.1 B	9.1 B	12.9	8.4 B			
SELENIUM										
SILVER										
ZINC	23.3	28.6	13.5 B	424	46.5 B	47.3	50.1	14.8 B	22.8	12.2 B

J - ESTIMATED VALUE
B - VALUE IS ABOVE INSTRUMENT DETECTION LIMIT BUT BELOW CONTRACT REQUIRED DETECTION LIMIT (CRDL)
1 - B&V, BLACK & VEATCH FOR EPA; E&E, ECOLOGY & ENVIRONMENT FOR EPA; FTCH, FISH BECK, THOMPSON, CAR & HUBER FOR WHITELAKE LANDFILL; MDPH, MICHIGAN DEPT. OF PUBLIC HEALTH; EDI, ENVIRONMENTAL DATA, INC. FOR CITY OF WHITEHALL
2 - CONCENTRATION EXCEEDS MCL
3 - CONCENTRATION EXCEEDS WATER QUALITY CRITERIA FOR THE PROTECTION OF PUBLIC HEALTH
4 - CONCENTRATION EXCEEDS PROPOSED MCLG

TABLE 2

SUMMARY OF PREVIOUS INORGANIC RESULTS (IN UG/L)
PAGE 2 OF 5

DETECTED COMPOUNDS	DATE WELL SAMPLER[1]	12-88 MW 4D B&V	12-88 MW 5S B&V	12-88 MW 5D B&V	12-88 PRP 23D B&V	12-88 FIELD/BLANK B&V	1-88 MW 1S E&E	1-88 MW 1S (DUP) E&E	1-88 MW 1D E&E	1-88 MW 2S E&E	1-88 MW 2D E&E
ALUMINUM				28.4 B		30.2 B					
BARIUM		12.7 B	28.4	22.7 B	27.9 B	3.6 B	20.1 B	19.4 B	25.8 B	37.6 B	12.4 B
CADMIUM											
CHROMIUM											
COPPER		4.4 B	6.1 B		4.6 B	3.5 B	28.6				
LEAD				2.7 B							
MANGANESE		6.3 B		12.0 B					5.7 B		
NICKEL			12.6 B	10.8 B							
SELENIUM											
SILVER				4.2 B							
ZINC		51.9	40.5	10.5 B	172		18.8 B			8.4 B	

J - ESTIMATED VALUE
B - VALUE IS ABOVE INSTRUMENT DETECTION LIMIT BUT BELOW CONTRACT DETECTION LIMIT (CRDL)
1 - B&V, BLACK & VEATCH FOR EPA; E&E, ECOLOGY & ENVIRONMENT FOR EPA; FTCH, FISH BECK, THOMPSON, CAR & HUBER FOR WHITELAKE LANDFILL; MDPH, MICHIGAN DEPT. OF PUBLIC HEALTH; EDI, ENVIRONMENTAL DATA, INC. FOR CITY OF WHITEHALL
2 - CONCENTRATION EXCEEDS MCL
3 - CONCENTRATION EXCEEDS WATER QUALITY CRITERIA FOR THE PROTECTION OF PUBLIC HEALTH
4 - CONCENTRATION EXCEEDS PROPOSED MCLG

TABLE 2

SUMMARY OF PREVIOUS INORGANIC RESULTS (IN UG/L)
PAGE 3 OF 5

DETECTED COMPOUNDS	DATE WELL SAMPLER[1]	1-88 MW 3S E&E	1-88 MW 3D E&E	1-88 MW 4D E&E	1-88 MW 4S E&E	1-88 MW 4D (DUP) E&E	1-88 MW 5D E&E	1-88 BLANK (MUNIC. WELL) E&E	1-88 MW 5S E&E
ALUMINUM				468	33.4	281			
BARIUM		47.8 B	26.1 B	14.7 B	24.9 B	14.0 B	19.1 B		21.0 B
CADMIUM									
CHROMIUM				15.0		16.0	14	8.0 B	
COPPER						47.7		79.3	67.8
LEAD				31.4		9.9			
MANGANESE		26.7	16.2	37.2	4.0 B	37.2	2.4 B		3.2 B
NICKEL		28.3 B							
SELENIUM									
SILVER									
ZINC		24.3		1010	14.3 B		39.4	7.4 B	94.7

! - ESTIMATED VALUE
B - VALUE IS ABOVE INSTRUMENT DETECTION LIMIT BUT BELOW CONTRACT DETECTION LIMIT (CRDL)
1 - B&V, BLACK & VEATCH FOR EPA; E&E, ECOLOGY & ENVIRONMENT FOR EPA; FTCH, FISH BECK, THOMPSON, CAR & HUBER FOR WHITELAKE LANDFILL; MDPH, MICHIGAN DEPT. OF PUBLIC HEALTH; EDI, ENVIRONMENTAL DATA, INC. FOR CITY OF WHITEHALL
2 - CONCENTRATION EXCEEDS MCL
3 - CONCENTRATION EXCEEDS WATER QUALITY CRITERIA FOR THE PROTECTION OF PUBLIC HEALTH
4 - CONCENTRATION EXCEEDS PROPOSED MCLG

TABLE 2

SUMMARY OF PREVIOUS INORGANIC RESULTS (IN UG/L)
PAGE 4 OF 5

DETECTED COMPOUNDS	DATE WELL SAMPLER[1]	8-87 MW 1D E&E	8-87 MW 1S E&E	8-87 MW 2D E&E	8-87 MW 2D (DUP) E&E	8-87 MW 2S E&E	8-87 MW 3D E&E	8-87 MW 3S E&E	8-87 MW 4D E&E	8-87 MW 4S E&E
ALUMINUM		113	92	282	187	250	247	239	917	367
BARIUM		49	38	22	41	152	43	46	109	97
CADMIUM		2.7	1.6	2.5	1.4	5	3.8	3.3	3.5	4.9
CHROMIUM		12	11	16	13	24	7.3	4.6	5.5	15
COPPER		22	23	25	23					
LEAD		750[2]	369[2]	660[2]	261[2]	809[2]	619[2]	578[2]	609[2]	872[2]
MANGANESE		16	29	28	18	30	38	35	38	26
NICKEL		10	18[3]	12	11	22[3]	16[3]	9.8		9.3
SELENIUM										
SILVER										
ZINC		31,800	15,700	32,900	13,400	45,100	46,000	36,800	46,300	52,500

J - ESTIMATED VALUE
B - VALUE IS ABOVE INSTRUMENT DETECTION LIMIT BUT BELOW CONTRACT REQUIRED DETECTION LIMIT (CRDL)
1 - B&V, BLACK & VEATCH FOR EPA; E&E, ECOLOGY & ENVIRONMENT FOR EPA; FTCH, FISH BECK, THOMPSON, CAR & HUBER FOR WHITELAKE LANDFILL; MDPH, MICHIGAN DEPT. OF PUBLIC HEALTH; EDI, ENVIRONMENTAL DATA, INC. FOR CITY OF WHITEHALL
2 - CONCENTRATION EXCEEDS MCL
3 - CONCENTRATION EXCEEDS WATER QUALITY CRITERIA FOR THE PROTECTION OF PUBLIC HEALTH
4 - CONCENTRATION EXCEEDS PROPOSED MCLG

TABLE 2

SUMMARY OF PREVIOUS INORGANIC RESULTS (IN UG/L)
PAGE 5 OF 5

DETECTED COMPOUND	DATE WELL SAMPLER	8-87 MW 5D E&E	8-87 MW 5S E&E	8-87 80T-1 E&E	8-87 80T-3 E&E	8-87 FIT E E&E	8-87 Blank E&E	8-87 BLANK(PW3) E&E	8-87 PW-3 E&E
ALUMINUM		100	247		183	471			
BARIUM		35	24		53	26			
CADMIUM		3.6	1.0	2.3	6.4[4]	1.7			
CHROMIUM		14	8.6	5.5	7.6	21			
COPPER									
LEAD		789[2]	308[2]	125J	443[2]	466[2]		24[4]	13.0J
MANGANESE		16	38	102	31	132[2]	2.5		
NICKEL		13	22[3]			29[3]			
SELENIUM									
SILVER									
ZINC		44,700	13,900	142	39,600	36,600	133	26.5J	7.4J5

J - ESTIMATED VALUE
B - VALUE IS ABOVE INSTRUMENT DETECTION LIMIT BUT BELOW CONTRACT REQUIRED DETECTION LIMIT (CRDL)
1 - B&V, BLACK & VEATCH FOR EPA; E&E, ECOLOGY & ENVIRONMENT FOR EPA; FTCH, FISH BECK, THOMPSON, CAR & HUBER FOR WHITELAKE LANDFILL; MDPH, MICHIGAN DEPT. OF PUBLIC HEALTH; EDI, ENVIRONMENTAL DATA, INC. FOR CITY OF WHITEHALL
2 - CONCENTRATION EXCEEDS MCL
3 - CONCENTRATION EXCEEDS WATER QUALITY CRITERIA FOR THE PROTECTION OF PUBLIC HEALTH
4 - CONCENTRATION EXCEEDS PROPOSED MCLG
J5 - FIELD BLANK MEU 355 SHOWED CONTAMINATIONS FOR Cu (85.8 UG/L) AND Zn (26.5 UG/L) THEREFORE ALL Cu, Zn DATA WERE ESTIMATED

All monitoring well samples collected on August 12, 1987, contained elevated inorganic concentrations of cadmium, chromium, lead and nickel and may represent background conditions. PW3 did not contain any inorganic contaminants.

B) Soil:

A limited number of soil samples were collected (including the area nearby the laundromat/dry cleaner) that showed virtually no contamination (See figure 4). Two set of samples were taken. One from the surface, and the second set was taken from the subsurface (3 feet).

The findings of the of the RI indicate the following:

A) Groundwater:

Groundwater samples were analyzed for over 150 organic and inorganic compounds which make up the Hazardous Substance List (HSL). Three samples showed concentration of acetone above the detection limits of laboratory methods. Acetone is a common contaminant which may have a source other than the groundwater samples collected. Chloroform was detected in the field blank and three trip blanks and 2- butanone was detected in one of these blanks. The source of these compounds are unknown. However, acetone, chloroform and 2-butanone are common laboratory introduced contaminants. The contaminants detected were all below the maximum contaminant levels (MCLs) or maximum contaminant level goals (MCLGs) for drinking water. Similarly, inorganic concentrations reported for all samples did not exceed the drinking water standards.

B) Hydrogeologic Modeling Study Results

In addition to the groundwater sampling, Black and Veatch conducted the hydrogeologic modeling study to evaluate the potential for contaminated groundwater from beneath either the Whitelake Landfill or the Shellcast site being drawn into municipal well PW3 during pumping. Results indicate that continuous, long term pumping of PW3 at rates of 150 to 300 gallons per minute (gpm) should not draw in any contaminated groundwater from beneath the Whitehall Landfill or the Shellcast site. However, continuous, long term pumping of PW3 at 500 gpm could draw in contaminated groundwater from the Whitelake Landfill and/or Shellcast site.

According to the director of public works from the City of Whitehall, the maximum pumpage rate was 350 gpm, and the routine pumpage rate was at 250 gpm when it was being used. Also, PW3 was not being used more than seven hours straight at a time. As of September 1, 1989, the municipal well 3 has been permanently abandoned.

RISK ASSESSMENT

Only one scenario, dealing with the ingestion of contaminated groundwater by people, was evaluated. This was because groundwater is the only medium of concern.

Cancer potency factors (CPFs) have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

Reference doses (RFDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting noncarcinogenic effects. RFDs, which are expressed in units of mg/kg-day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals, that are not likely to pose appreciable risks of adverse health effects. Estimated intakes of chemicals from environmental media (e.g., the amount of chemical ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). The uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse noncarcinogenic effects to occur.

Excess lifetime cancer risks are determined by multiplying the intake level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g., $1x10^{-7}$ or 1 E-7). An excess lifetime cancer risk of $1x10^{-6}$ indicates that, as a plausible upper bound, an individual has a one in one million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site.

Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as the hazard quotient (HQ) (or the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminant's reference dose). By adding the HQs for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

The risk assessment was performed under a scenario where PW3 would still be operational. Under this scenario, the following conclusions can be made.

Using a hazardous index approach, developed to assess the overall potential for noncarcinogenic effects posed by multiple chemicals, when the index exceeds unity there may be concern for a potential health risk. However, the hazardous index is simply a numerical index to help identify potential exposure problems. Based on the groundwater data obtained from monitoring wells, only zinc exceeds unity with the value of 7.5 (See Table 3). There are many uncertainties associated with this number as will be discussed later.

For potency carcinogens, risks are estimated as probabilities. As noted above, the risk is a product of chemical daily intake and carcinogenic potency factor. Based on the groundwater data on the monitoring wells, the carcinogenic risk is within 10^{-4} to 10^{-7}, generally the agency's acceptable target risk range for protection of public health (See Table 3).

In interpreting the risk assessment, many uncertainties have to be taken into account. First, in doing the risk calculations, the highest one-time concentration was used instead of a most probable case scenario. Secondly, the data set used had poor quality control(QC) compared to other data sets which showed little or no contamination. Furthermore, the data used was not the most recent. For example, the Black and Veatch round showed lead present in some of the monitoring wells but at levels well below the detection limit; zinc was detected but at levels well below the MCL. U.S. EPA results showed no contamination of concern. Therefore, because the Black and Veatch and U.S. EPA data is more recent and does not have the QC concerns of the earlier FIT data, the lower zinc and lead levels may be more representative of actual site conditions. Finally, PW3 has not shown any contamination since 1982.

In summary, the most recent data on PW3 and surrounding monitoring wells under the worst case scenario, indicate that there is presently no noncarcinogenic risk at the site. The carcinogenic risk is within 10^{-4} to 10^{-7}, generally the agency's acceptable target risk range for protection of public health. With the permanent abandonment of PW3, any risk remaining at the site has been eliminated. The exposure to past contamination from PW3 was most likely subchronic and for short duration.

Documentation of Significant Changes

There are no significant changes from the preferred alternative described in the proposed plan.

The Selected Remedy

The findings of the PW3 RI showed no contaminants that exceeds any state or federal standards or criteria for drinking water. Also, there is no longer a continuing source of contamination. Therefore, no further action is recommended at the Whitehall Municipal Wells site.

Table 3
Chemical-Specific Risk

Chemical	Chronic Hazard Index (NonCarcinogenic Risk)	Total Carcinogenic Chemical Specific Risk
Benzene	-	8.4×10^{-6}
Bis(2-ethylhexyl)phthalate	0.136	3.8×10^{-5}
Lead	-	-
Zinc	7.500	NA

\- Cancer potency factor and Reference dose not available for lead.

NA Zinc does not exhibit any carcinogenic effects.

Statutory Determinations

The conditions at the site pose no current or potential threat to human health or the environment. Therefore, no further remedial action is necessary. Because no further action is necessary, the statutory requirements of CERCLA Section 121 for remedial actions are not applicable. Because this remedy will not result in hazardous substances remaining on-site above health based levels, the 5-year review will not apply to this action.

Protection of Human Health and the Environment

Because this remedy will not result in hazardous substances remaining onsite above health-based levels, this remedy is protective of human health and the environment. The U.S. Environmental Protection Agency, Michigan Department of Natural Resources, and the Michigan Department of Public Health concur with the assessment that the site poses no unacceptable risk to human health and the environment.

ATTACHMENT II

Community Relations Responsiveness Summary
Whitehall Municipal Wells Site
Whitehall, Michigan
September, 1989

The purpose of this community relations response summary is to document the community relations activities along with citizen comments and Agency responses.

The selected remedy of no further action was presented in the August 14, 1989 Public Proposed Plan and at the public hearing. There has been some negative public reaction to the selected remedy before or during the comment period. The City of Whitehall, Muskegon County and the State of Michigan concur with the Agency's decision.

COMMUNITY RELATIONS

A community relations plan was submitted to and approved by the United States Environmental Protection Agency (U.S. EPA) in September 1989. Citizen concerns surfaced only recently, not on the Whitehall Municipal Wells Site, but on the Whitelake Landfill Site located nearby. The landfill was recently permitted by the state to expand its boundaries and volumes of intake. There are also neighboring chemical companies that are of concern to the citizens. Efforts have been made to maintain contact with the citizen group and to address their concerns as much as possible. An informal meeting was held with the citizen group on August 9, 1989.

The dates of the public comment period, the date and the location of a public hearing and a summary of the Proposed Plan were announced through a legal notice in local newspaper.

The Whitehall Municipal Wells Proposed Plan, which includes a description of the investigation findings and conclusions, was mailed to those on the community relations mailing list and was available along with the Administrative Record and information repositories at the Whitehall Municipal Library in Whitehall.

The public hearing was held at the Whitehall City Hall, 405 Colby Street, on Thursday, August 24, 1989 to discuss the Remedial Investigation and the preferred alternative. Approximately 30 people were at the hearing. Following presentations by U.S. EPA, several people expressed comments.

Comments raised during the public comment period, which are relevant to the Proposed Plan, are summarized below. The comment period was held from August 14 to September 13, 1989.

SUMMARY OF PUBLIC COMMENTS AND AGENCY RESPONSE

Comment: One of the commenters was concerned about chemicals showing up below the health based levels, and wanted to know if a qualitative approach has been taken in assessing the risk from the site.

EPA Response: The production well 3 has not shown any contamination since 1982. The surrounding monitoring wells have shown occasional contaminants at very low levels. Some of the chemicals like acetone and toluene can be attributable as lab contaminants. Due to the geology of the site, the aquifer is very susceptible to contamination and it would not be unusual to have some contaminants detected from time to time at low levels. There is no consistency to the contaminants showing up and there is no consistent source to be found.

Comment: One private citizen expressed concerns about the water quality from the whole area and wondered why the production well 3 is being shut down permanently when the well has no contamination problem. He also predicted that if the well 3 is used on a regular basis the well will pick up contaminants from the surrounding areas.

EPA Response: EPA did not require the City of Whitehall to permanently shut down the well. The City has done this on its own. According to the Director of Public Works for the City of Whitehall, the main reason for this shut down is economical. It is the oldest well in the city and has had a problem with sand sucking. It is not economically feasible to rehabilitate the well, and a new production well is taking care of the water needs.

A pumping test, at 700 gallons per minute (gpm), was conducted from the production well 3 in 1986 to see whether extensive pumping can draw any contaminants from the surrounding areas. After three days, no contaminants were detected in the production well. Currently, the pumping capacity from the well 3 is down to 220 gpm due to lack of maintenance. If the pumping test at 700 gpm did not draw any contaminants from the surrounding areas, it is doubtful that it will at 220 gpm. At any rate, the production well 3 is now permanently sealed and cannot be used.

Comment: Another private citizen raised an issue regarding the additive effect of the chemicals tested.

EPA Response: The production well 3 has not shown any contamination since 1982. The chemicals detected at low levels from the surrounding monitoring wells do not have known synergistic effects with each other. The risk assessment did consider the additive effect of chemicals. The additive risk for the carcinogenic chemicals is still within the acceptable range of $1x10^{-4}$ to $1x10^{-7}$.

Comment: One comment requested the formation of a citizen work group and asked if there will be a five year review at the Whitehall Municipal Wells site.

EPA Response: Currently, there is a citizen group in existence and there should be no difficulty formalizing the group. During the public hearing, the Muskegon County Health Department offered their help in forming a citizen work group.

The proposed remedy does not leave any contaminants above the health based levels, and therefore, there will no five year review at the site.